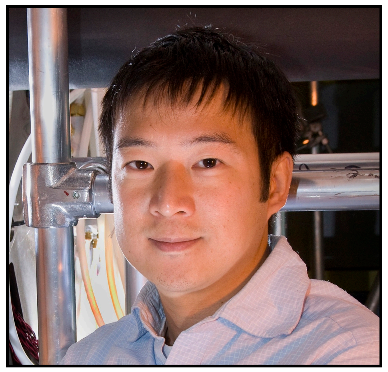
BNL/PHENIX Group

David Morrison
June 28, 2011

group composition

- 21 Ph. D. staff scientists (3 are junior staff)
- 9 technicians
- 3 engineers (mechanical & electrical)
- 4 physics associates (Master’s degrees, typ.)
- 3 computing professionals
- 2 administrative assistants

junior staff



Mickey Chiu: Ph.D., Columbia U. (2004), 2007 PECASE, W's in 500 GeV p+p, Muon Piston Calorimeter (forward π^0's), low-x suppression of di-hadrons submitted to PRL, arXiv:1105.5112v2, QM'11 talk on same

Carla Vale: Ph.D., MIT (2004), PHENIX Computing Coordinator, PHENIX plenary talk QM'09, outreach at DOE, leaving to attend Carnegie-Mellon business school

Anne Sickles: Ph.D., SUNY Stony Brook (2005), baryon "anomaly", v_3, higher twist baryon production, Phys. Rev. Lett. 105:062002,2010 (Sickles, Brodsky, Arleo, Hwang)

staffing plans

- open postdoc position to fill
- imminent departure of junior staff member
  - important to retain and fill this position
- discussions suggest 2-3 retirements over next few years
- want to add EE to support F/VTX (more on this)

collaboration leadership positions

PHENIX Organization Chart

Collaboration

Institutional Board

PHENIX Management

Spokesperson	Barbara Jacak	Stony Brook Univ
Operations Director	Edward O'Brien	BNL
Dpty Spokesperson	Yasuyuki Akiba	RIKEN
Dpty Spokesperson	Dave Morrison	BNL
Dpty Ops Manager	John Haggerty	BNL
Dpty Ops Manager	Mike Leitch	LANL

Executive Council
3/15 BNL Members

Detector Council
10/27 BNL Members

Physics Working Groups

Coordinators

Chief Engineer D. Lynch BNL	DAQ Coor. M.Purschke BNL	Computing Coor. C. Vale BNL	Analysis Coor. A. Frawley Florida St U	Trigger Coor. A Bazilevsky BNL	Run Coor. T. Sakaguchi BNL	PHENIX Admin B. Johnson BNL

PHENIX Organization

Executive Council

C. Aidala	LANL
Y. Akiba	RIKEN
G. David	BNL
O. Drapier	E Polytech
A. Frawley	FSU
Y. Goto	RIKEN
M. Grosse Perdekamp	UIUC
B. Jacak *	SBU
J. Lajoie	ISU
M. Leitch	LANL
D. Morrison	BNL
J. Nagle	UColorado
E. O'Brien	BNL
R. Seto	UCR
W. Zajc	Columbia

* = Chair

Detector Council

Y. Akiba	RIKEN
A.Bazilevsky	BNL
M. Brooks	LANL
C.Y. Chi	Columbia
A.Frawley	FSU
J. Frantz	Ohio U
A. Franz	BNL
V. Greene	Vanderbilt
M. Grosse Perdekamp	UIUC
J.Haggerty	BNL
H. Hamagaki	CNS-Tokyo
E.Kistenev	BNL
J. Lajoie	ISU
M. Leitch	LANL
D. Lynch	BNL
Y. Miake	Tsukuba
E. O'Brien *	BNL
C. Pinkenburg	BNL
M. Purschke	BNL
K. Read	U. Tenn
V.Riabov	PNPI
T.Sakaguchi	BNL
T. Sugitate	Hiroshima
I. Tserruya	WIS
C. Vale	BNL
J. Velkovska	Vanderbilt
(D. Winter)	Columbia

Physics Working Group Conveners

S. Bathe	Baruch
A.Drees	SBU
S. Esumi	Tsukuba
O. Eyser	UCR
J. Frantz	Ohio U
M. Grosse Perdekamp	UIUC
J. Lajoie	ISU
M. Rosati	ISU
K. Shigaki	Hiroshima

Research and operations effort breakdown

- Funding divided research:ops :: 40:60
- Split for individual physicists varies
- Research fraction is contingency of first resort

Current Institutional Responsibilities

Boldface denotes institutions of the subsystem manager or Detector Council member

Beam Beam Counters : Hiroshima, Columbia U

Zero Degree Calorimeter : BNL, Columbia U, IHEP-Protvino, Debrecen, ELTE, KFKI

Drift Chamber : Stony Brook-P, **Petersburg Nucl. Phys. Inst**., Institute of Nuclear Research

Pad Chamber: Vanderbilt U, Stony Brook-C, ORNL, Weizmann Inst, Lund

Time of Flight–East : Tsukuba Univ, Columbia U

Time of Flight–West: Vanderbilt U, BNL, Columbia U

Ring Imaging Cherenkov : CNS-Tokyo, KEK, Stony Brook, Florida State, Waseda, Nagasaki Inst of Applied Sci.

EM Calorimeter : IHEP-Protvino, Kurchatov Inst, ORNL, **BNL, Ohio U**

Aerogel Counter : Tsukuba, JINR-Dubna, CNS-Tokyo, BNL

Muon Tracking : LANL, U New Mexico, New Mexico State, Abilene Christian U, Yonsei, U Korea, Kangnung, Myongji, Korea Atomic Energy Res Inst, Saclay, EcolePoly Tech, Orsay, U Blaise Pascal, Subatech-Nantes

Muon Identifier : ORNL, **U Tennessee**, RIKEN, Kyoto, Tokyo Tech, BARC, Chinese Inst Atomic Energy

Muon Piston Calorimeter: BNL, Univ of Illinois

Magnets: BNL

Reaction Plane Detector : BNL, Tsukuba, U Maryland

Data Acquisition System : BNL, Columbia U, ORNL, U Colorado

Event Builder : Columbia U, Georgia State

LVL1 Trigger: Iowa State, U Illinois-UC, UC-Riverside, BNL, ORNL, RIKEN, CNS-Tokyo, KEK

Online Computing: BNL

Offline Computing : BNL, Majority of Institutions contribute

Data Production : BNL, Stony Brook, FSU, GSU

Institutions Involved in Recent Upgrades

Hadron Blind Detector : BNL, Columbia U, Stony Brook, **Weizmann Inst**

Silicon Vertex Barrel(VTX): Baruch College, BNL, Columbia U, Ecole Poly Tech, Iowa State U, JAEA, KEK, Kyoto U, LANL, ORNL, Rikkyo U, RBRC, **RIKEN**, Stony Brook U, U Colorado, U Massachusetts, U Tokyo

Forward Silicon Vertex (FVTX): BNL, Charles U, Columbia U, Czech Tech Inst , Czech Inst of Physics, Georgia State, **LANL**, NMSU, Saclay, UNM

Muon Trigger Detectors: Abilene Christian U, BNL, CIAE, Georgia State Univ, Hanyang U, Iowa State U, KEK, Korea U, Kyoto U, LANL, Morgan State U, Muhlenberg College, Peking U, RBRC, **RIKEN**, Rikkyo U, Seoul National U, U California-Riverside, U Colorado, **U Illinois-UC** , U New Mexico, Yonsei U

~50% of PHENIX institutions participated in recent upgrades

Boldface denotes institutions of the subsystem manager or Detector Council member

PHENIX Operations Labor

Sum of FTEs		Fiscal Year	
Division	Code	FY 2011	Grand Total
PHENIX	Permanent PhD	8.9	9.3
	Temporary PhD	2.2	2.2
	PHD Post Doc	0.0	0.0
	Professional	7.3	7.3
	Technician	6.0	6.0
	Administration	1.1	1.1
PHENIX Total		**25.5**	**25.5**

BNL Operations Responsibilities

- Operation of PHENIX Experimental facility and Collaboration Management
  - Membership in PHENIX Management group, Executive and Detector Councils
  - Coordination of physics run activities
  - All PHENIX facility ES&H, and Work Planning
  - Operating the local PHENIX office for visiting scientist and student support (~250/year)
  - Coordination of all experiment activities and publications
  - Data production and processing
  - Management, Coordination and participation in all shutdown work
    - Annual Detector maintenance
    - Installation and commissioning of Upgrade projects
- Responsibility for specific detector subsystems
  - **EMCal, ZDC, HBD, Magnets, DAQ, Online and Offline Computing, MPC, RXNP, VTX, FVTX**
- Maintenance of PHENIX common systems
  - Safety systems, LV, HV, general computing and data bases, electronics control and timing, gas systems, cooling
- Participation on R&D for future upgrades projects

Ops Responsibilities of Technical and Professional Staff

- DAQ, Electronics and Timing system Control 2.0 FTE's
- General computing, Online Offline Software, Data Production 3.0 FTE's
- LV, HV and Safety systems 1.5 FTE's
- Cooling and Gas System 1.5 FTE's
- Collaboration/Visitors support, Publications 1.1 FTE's
- BNL-based subsystems (EMCal, FVTX, ZDC, HBD, MPC, RXNP, Magnets, VTX) 2.5 FTE's
- Management, Coordination, Work Planning 1.3 FTE's
- R&D 1.5 FTE's

Total **14.4 FTE's**

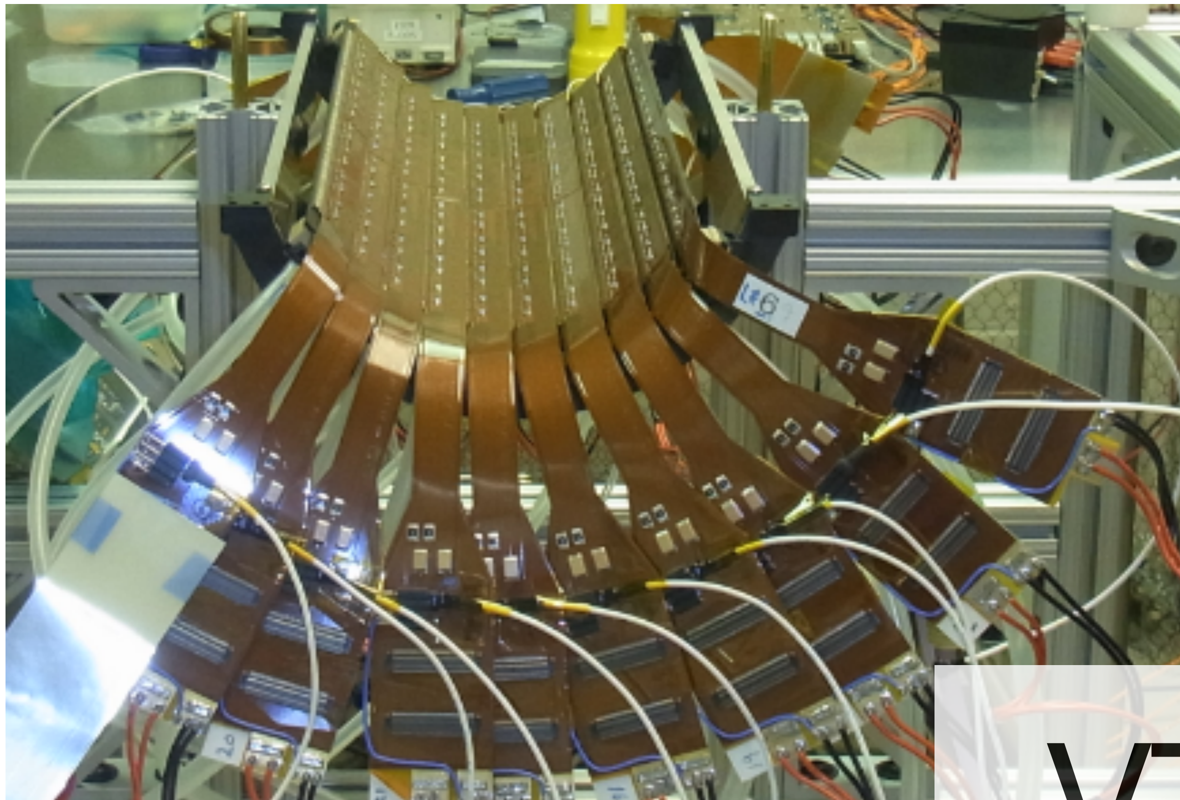
+11.1 FTE's from Scientists working on Operations

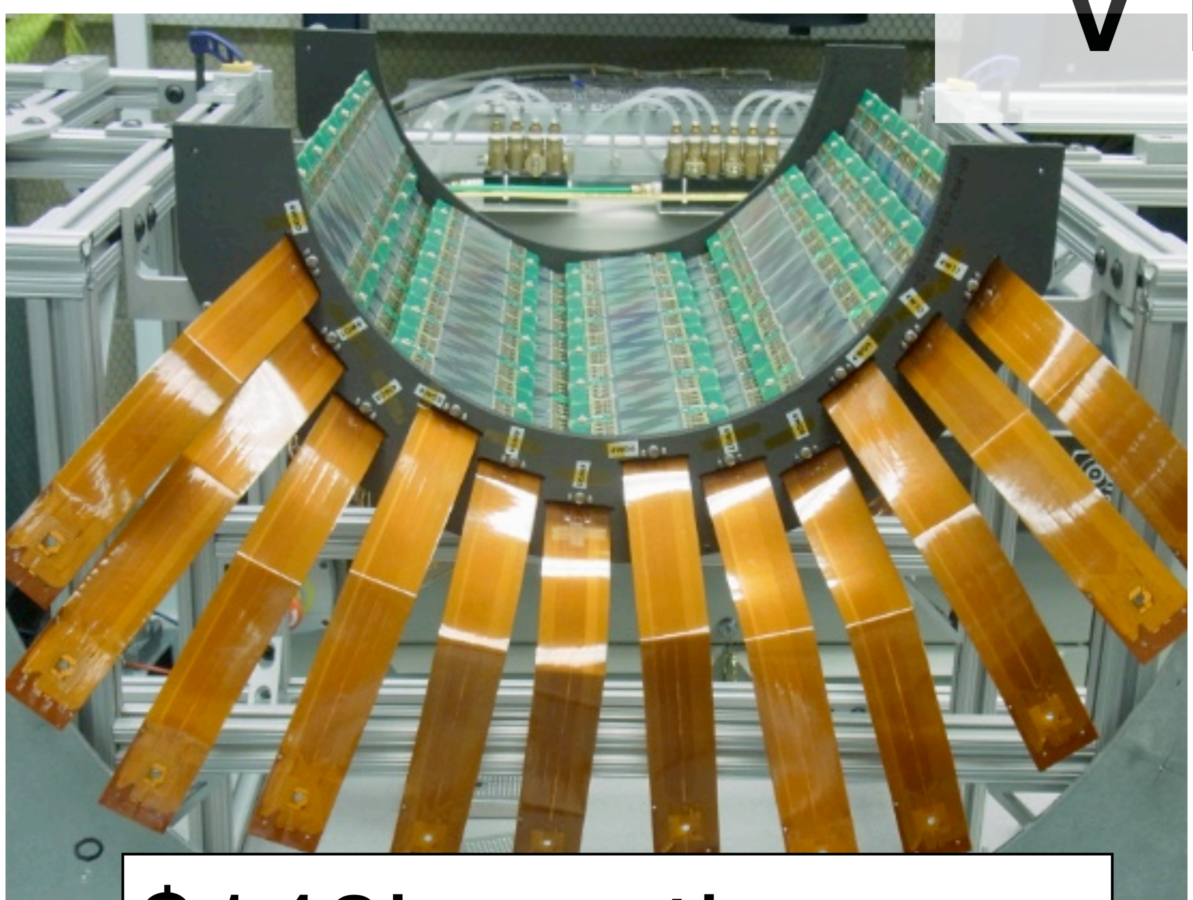
Ops Responsibilities of Scientific Staff

• Operations Management and Coordination	1.0 FTE’s
• DAQ, Electronics and Timing system Control	1.25 FTE’s
• General computing, Online-Offline Software, Data Production	2.5 FTE’s
• BNL-based subsystems (EMCal, ZDC, HBD, MPC, RXNP, Magnets, VTX, FVTX)	3.1 FTE’s
• Group/Collaboration/Visitors management, Publications	1.25 FTE’s
• R&D	2.0 FTE’s
Total	**11.1 FTE’s**

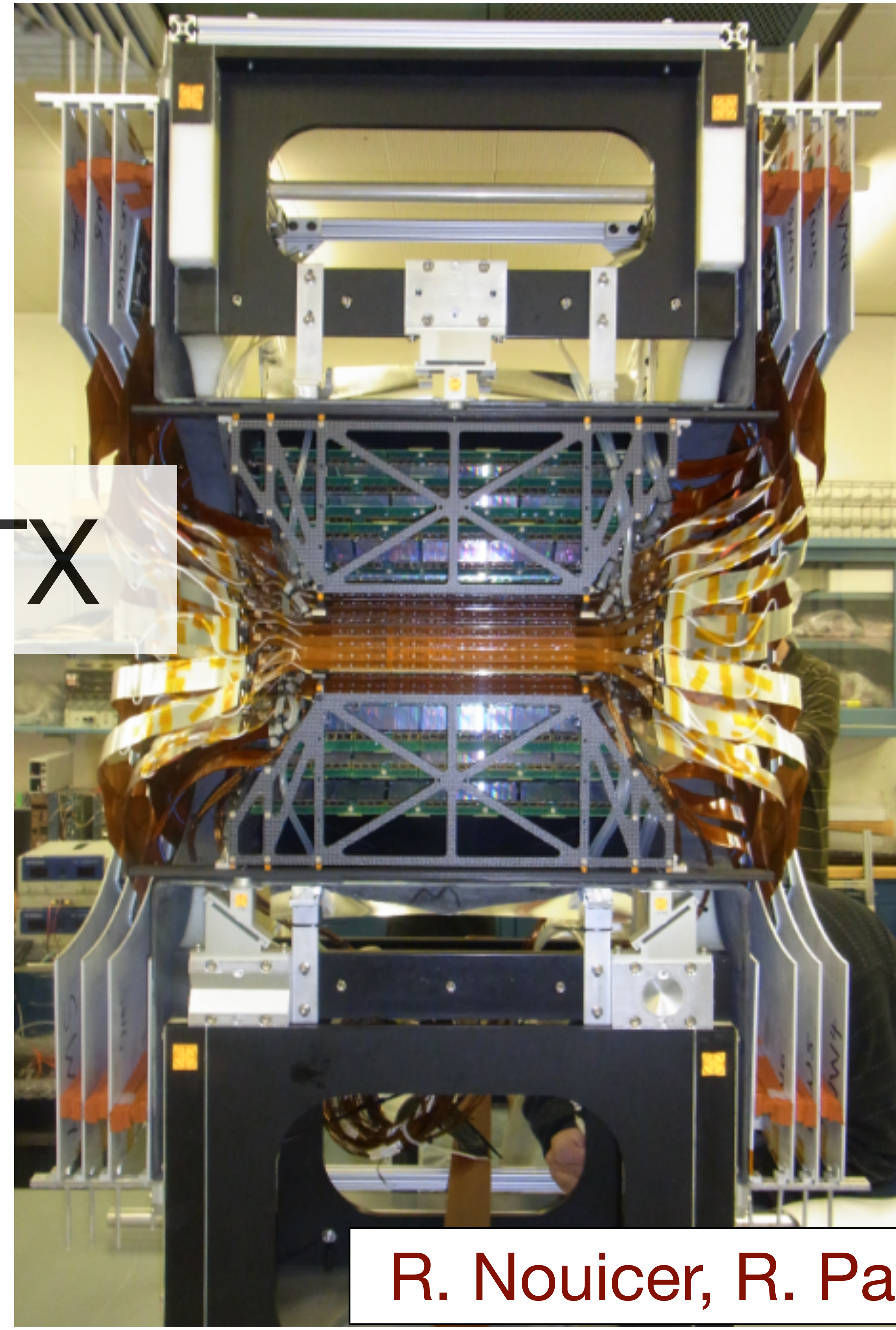
Electronics support staffing level and needs

VTX



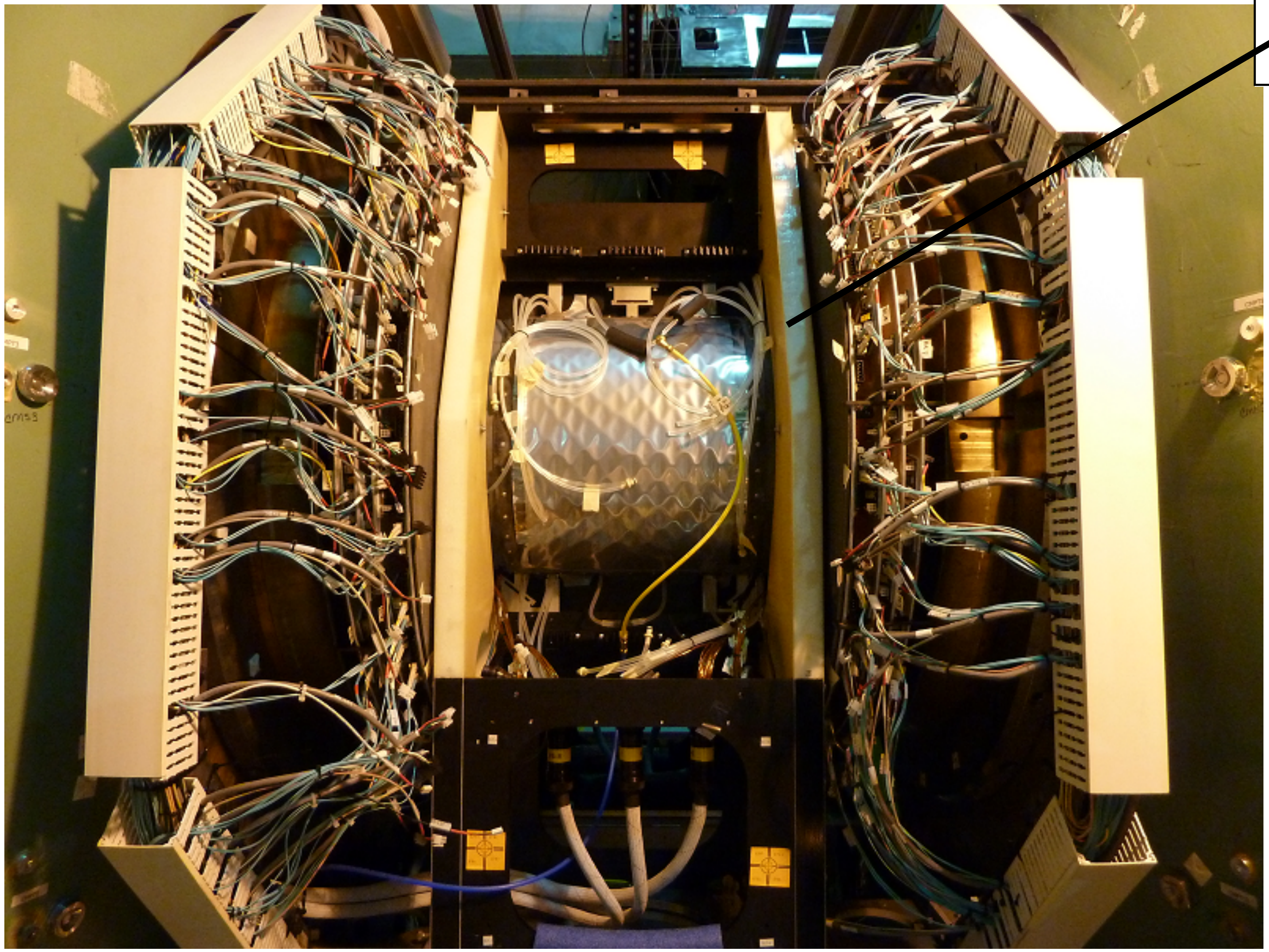


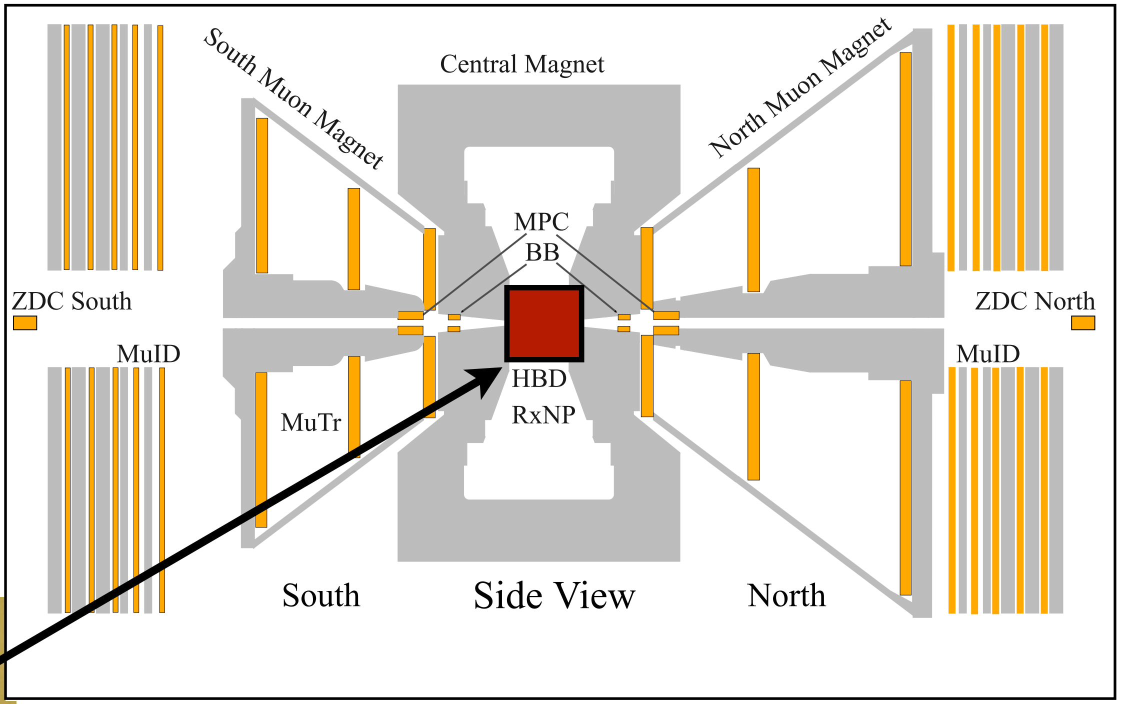
$140k contingency remaining at CD-4



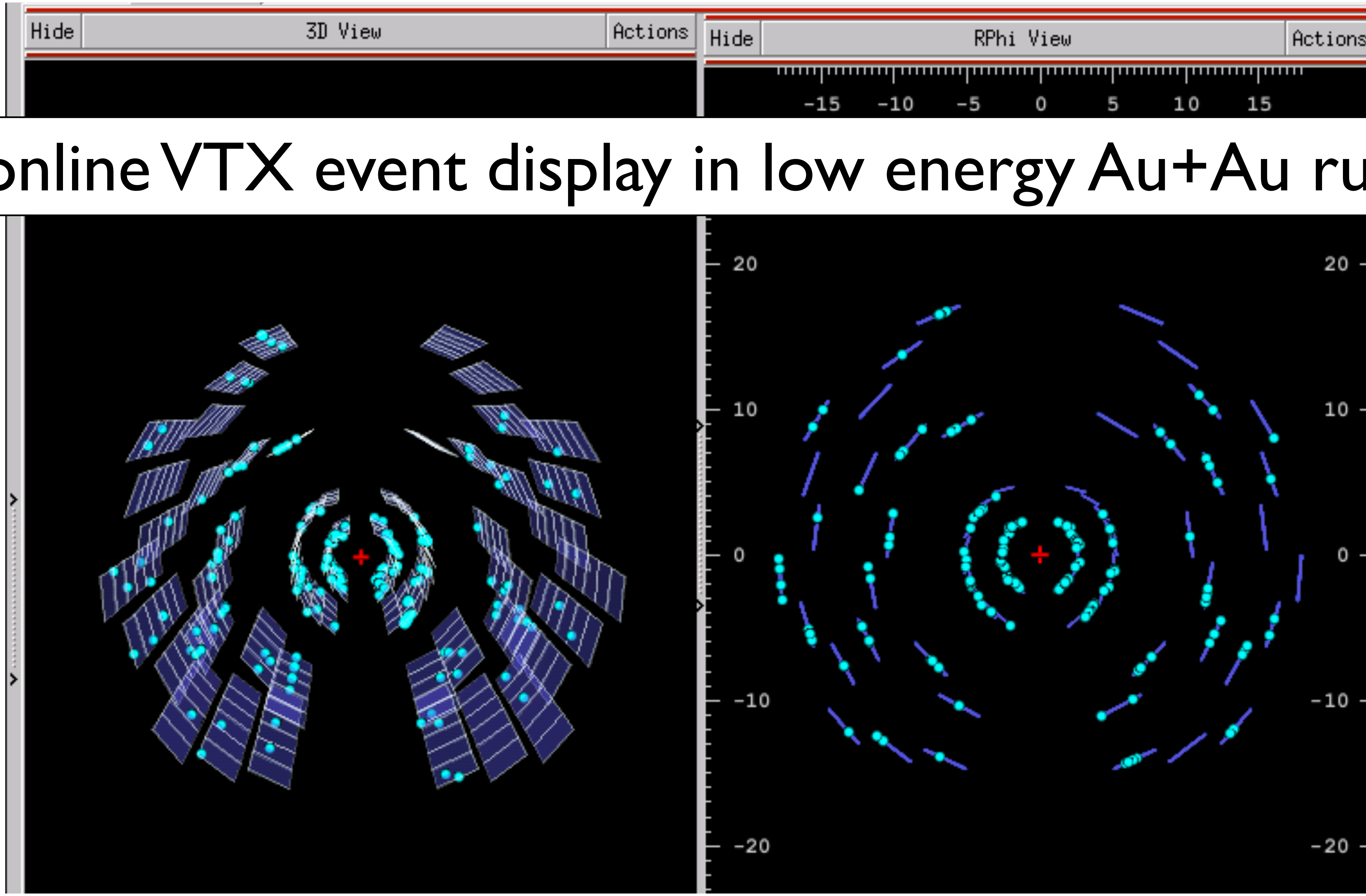
R. Nouicer, R. Pak

installed Dec. 1, 2010, in time for Run-11





completed within six weeks of originally scheduled date



online VTX event display in low energy Au+Au run

commissioned and operated in p+p and Au+Au
size of reconstructed beam spot agrees with vernier scans (95μm)
reconstructing event-by-event vertex position
adds important new (charm,bottom) physics capability to PHENIX

Incremental Operations Needs

Highest priority is to provide electronics engineering support for the new silicon barrel (VTX installed in 2010) and silicon endcaps (FVTX to be installed in 2011)

- these two detectors add >5M channels to PHENIX through 3 custom electronics chains
- The VTX+FVTX (Total cost $14M with funding from DOE+Japan+France) will be critical components in the PHENIX physics program for the foreseeable future.
- VTX+FVTX electronics management and integration support has been provided by Columbia University over the past 4+ years but the funding has been project-based.

Text

- Need to provide a commitment through operating funds to retain the expertise developed over the last 4-5 years in the VTX+FVTX electronics.
- Without adequate support of the silicon detector electronics one can expect significantly longer commissioning and repair times, lower detector efficiencies and potentially out of spec performance.
- Current PHENIX-BNL electronics engineering support (2 FTE's) are saturated . We can't add this large responsibility to their portfolio.
- No alternate source of EE-support for silicon detectors exists in PHENIX collaborating groups.

propose to use VTX contingency to hire for rest of FY; new DOE funds for ~1/2 of support, rest from existing PHENIX ops

FY10-11 science highlights and research plans

four year research plan

- hadron-blind detector
- muon piston calorimeter
- W physics
- J/ψ in d+Au
- forward/central π^0 correlations
- R_{AA} of π^0, η, ω
- low-energy running
- forward calorimetry (nose-cone calor.)

from 2008 DOE quadrennial review of nuclear physics research programs, May 2008

four year research plan

- hadron-blind detector

(WI,SB,BNL) successfully installed & operated in run 9 & 10 (p+p & Au+Au)

- muon piston calorimeter

(UIUC, BNL) successfully installed and operated, analyzed, publications

- W physics

program underway, first results in p+p shown ICHEP'10, accumulating statistics, μ-trigger addition

- J/ψ in d+Au

(UC, LANL, FSU) preliminary results shown at QM'11

- forward/central π^0 correlations

(UIUC, BNL, ...) suppression of low-x dihadrons, QM'11, arXiv:1105.5112

- R_{AA} of π^0, η, ω

(WI, SB, BNL, ...) high p_T η: Phys. Rev. C82, 011902 (2010), reaction plane dependence: Phys. Rev. C80, 054907(2009) , light mesons

- low-energy running

task force on low energy running, several data sets, fluctuations, v_2

- forward calorimetry (nose-cone calor.)

(IAS, BNL) reconceived as preshower for muon piston calorimeter

four year research plan

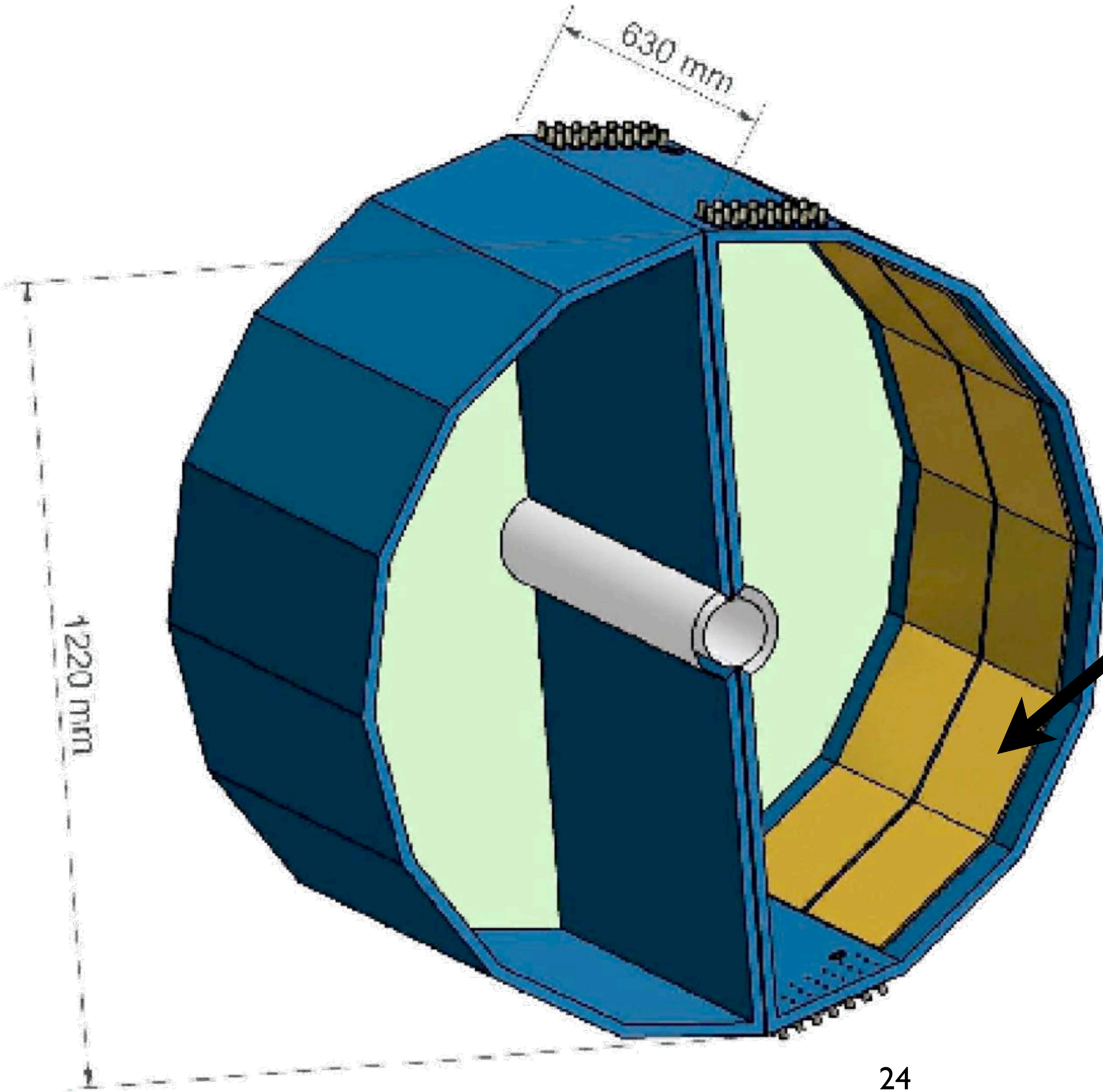
- hadron-blind detector
- muon piston calorimeter
- W physics
- J/ψ in d+Au
- forward/central π^0 correlations
- R_{AA} of π^0, η, ω
- low-energy running
- forward calorimetry (nose-cone calor.)

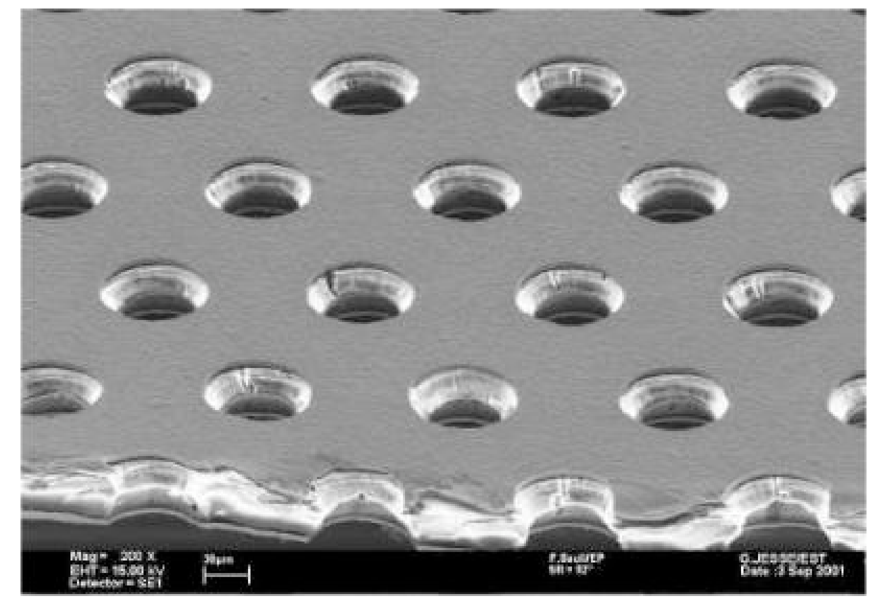
☑ higher order flow: v_3

☑ direct photon v_2

☑ low p_T thermal γ

hadron blind detector

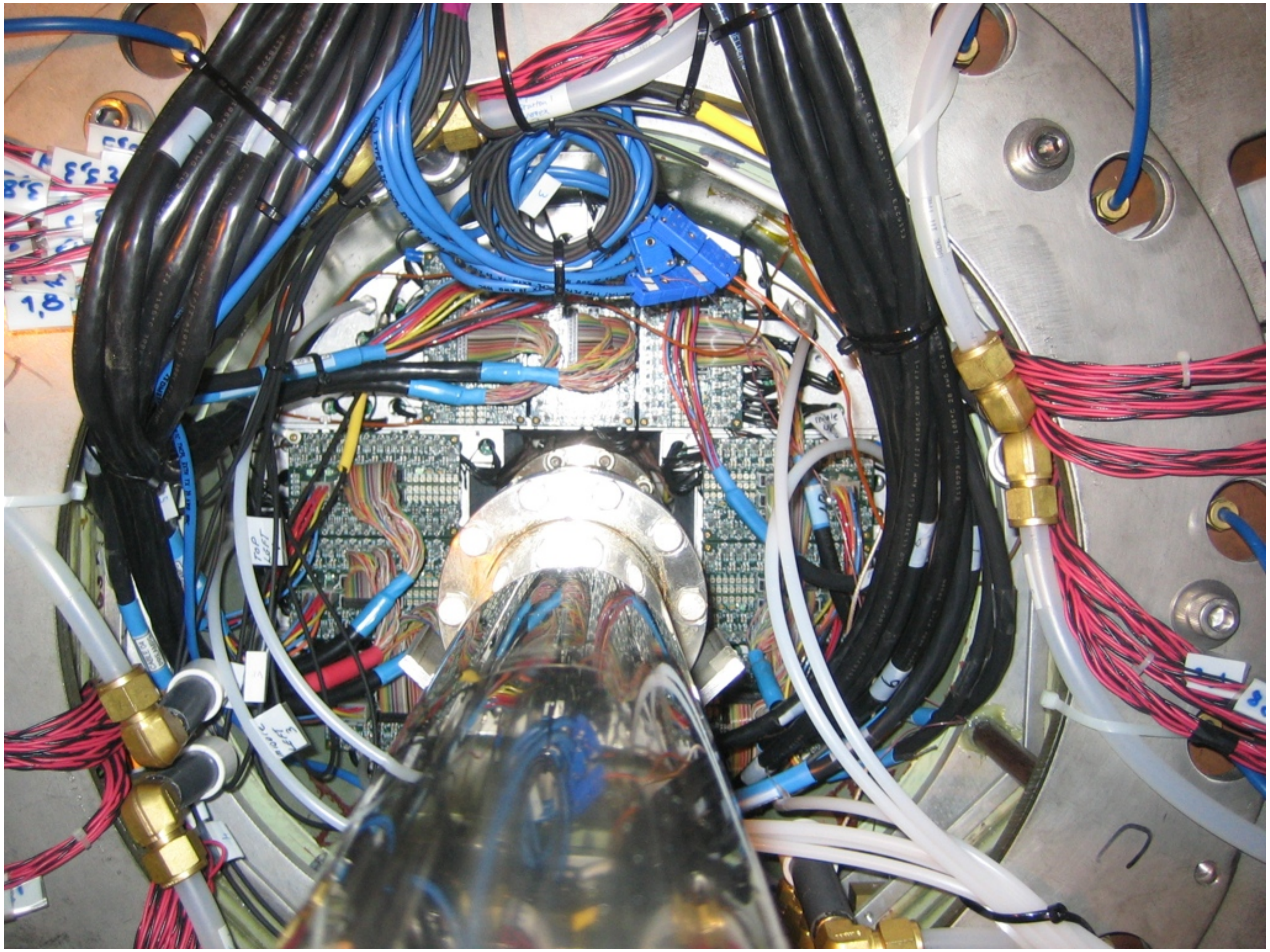




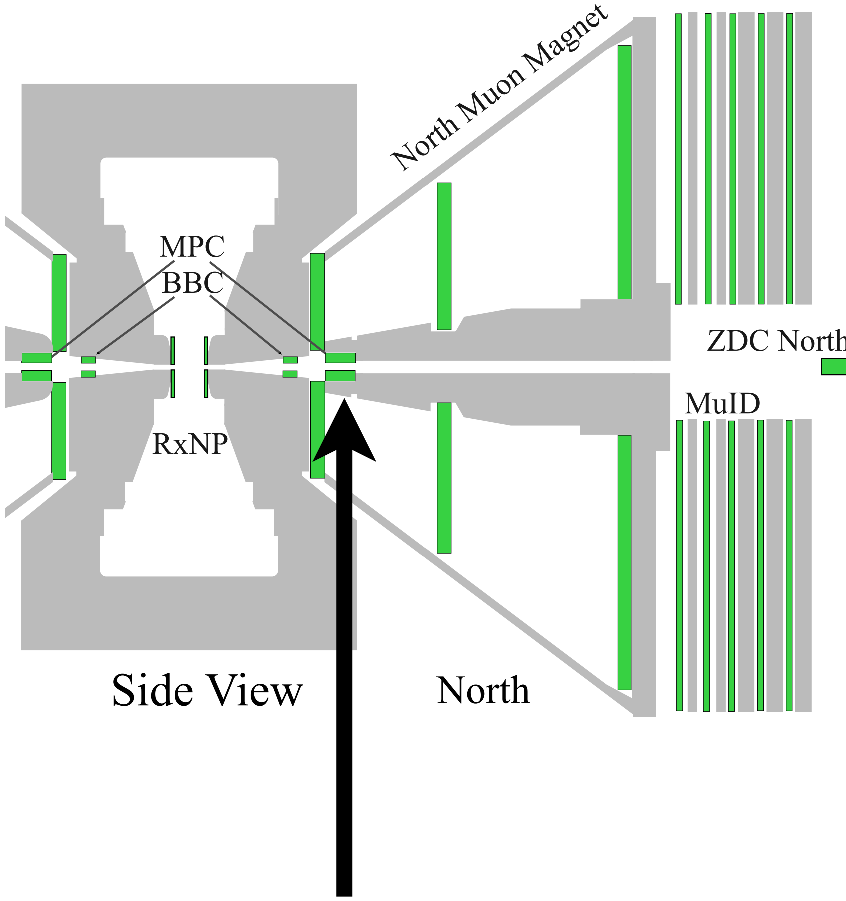
GEM

insensitive to hadrons
+
rejects Dalitz decays

muon piston calorimeter (MPC)



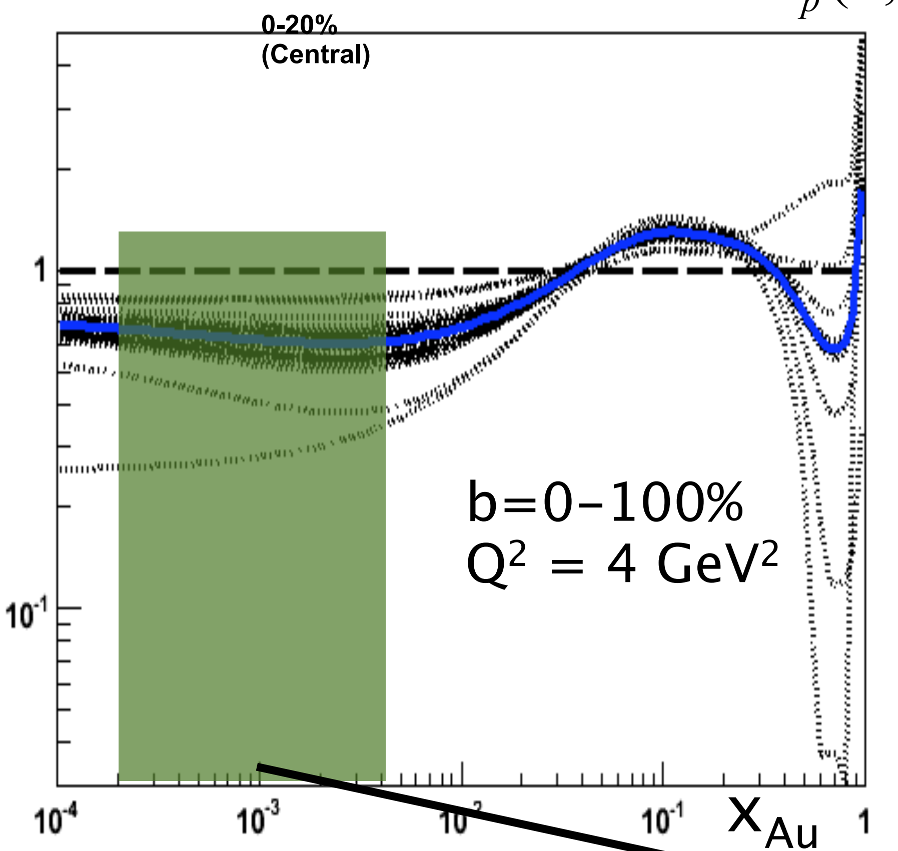
M. Chiu



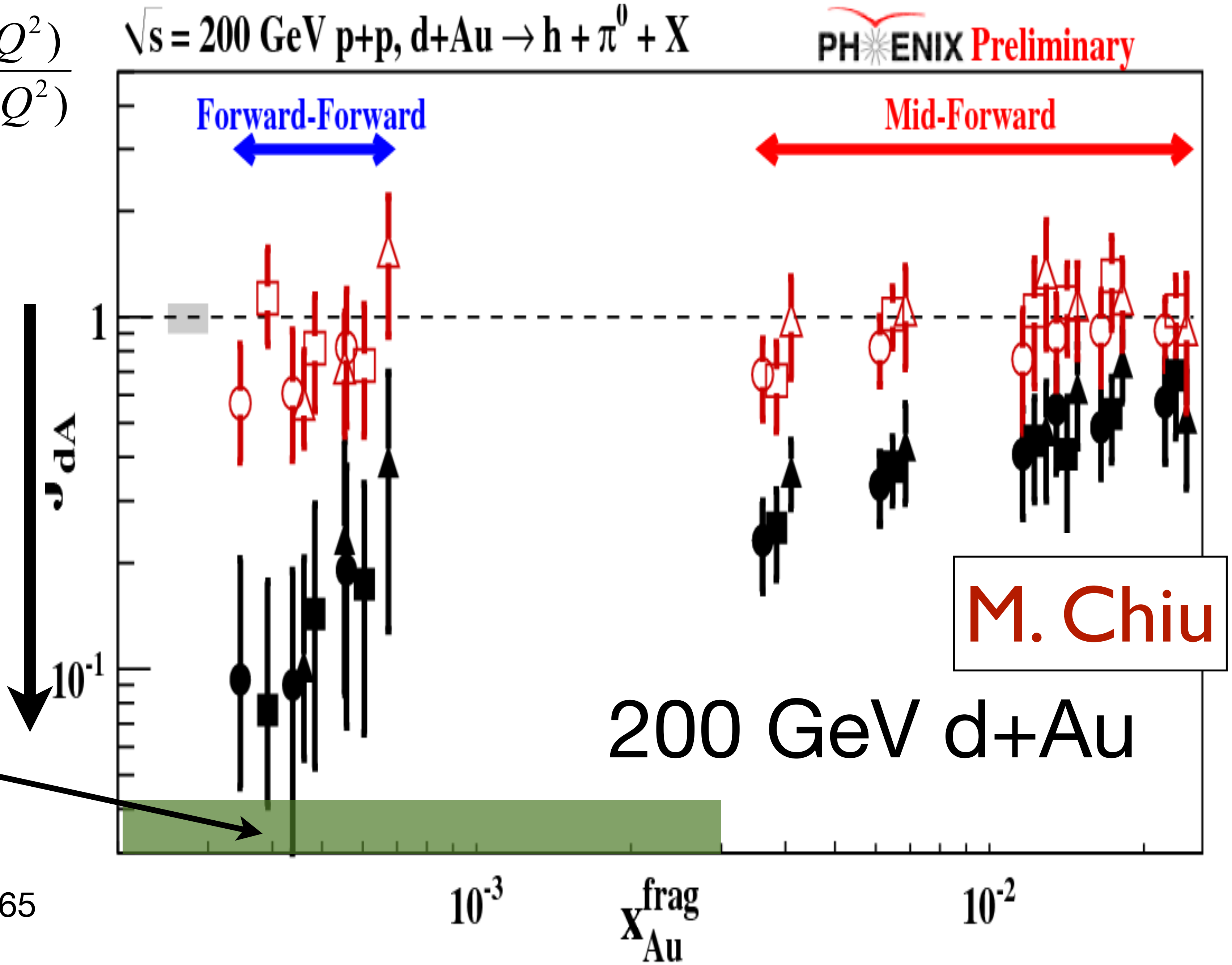
UIUC, BNL

di-hadron suppression

$$R_G^{Au}(x,Q^2) = \frac{xG_{Au}(x,Q^2)}{AxG_p(x,Q^2)}$$

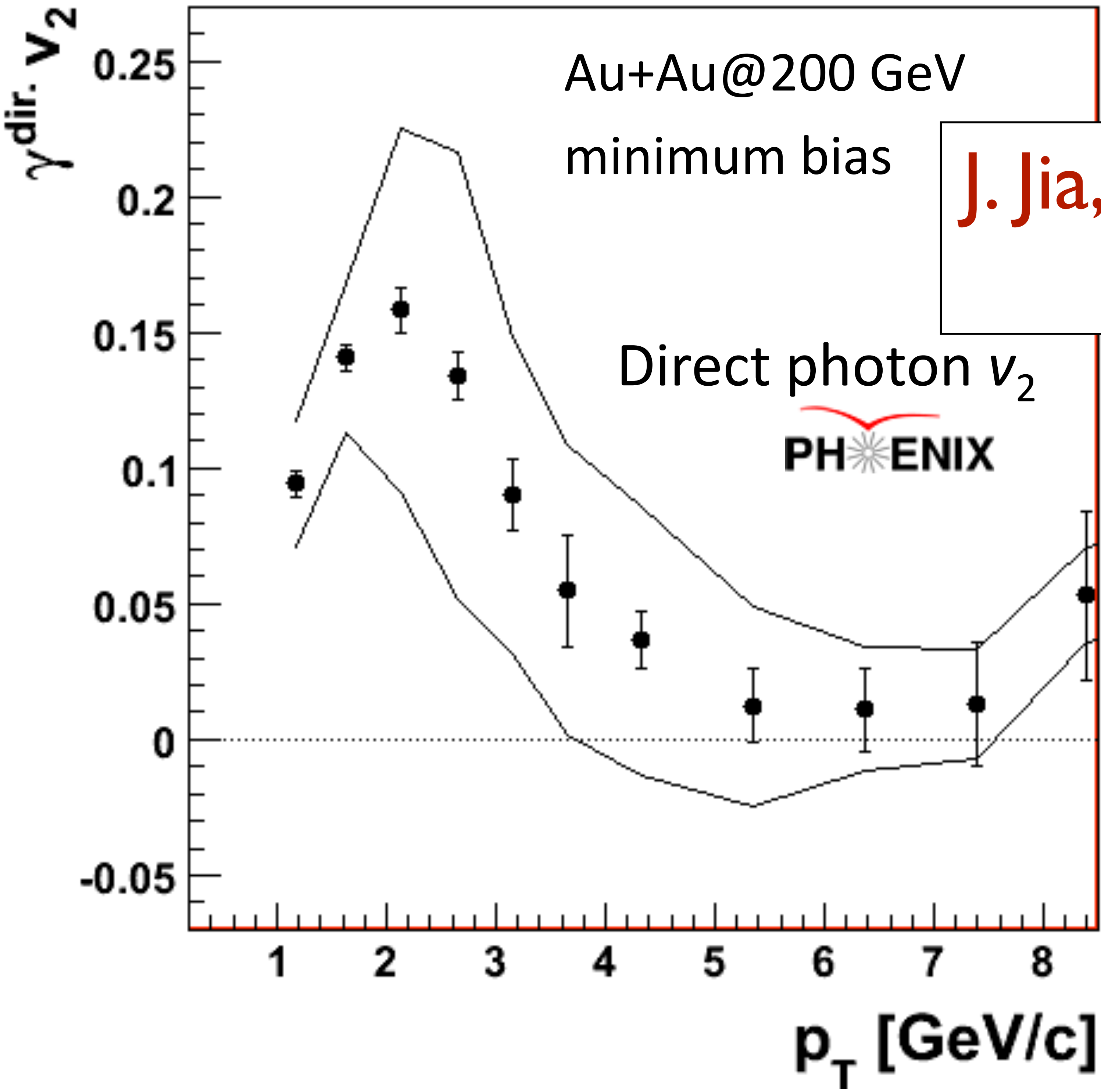


Eskola , Paukkunen, Salgado, JHP04 (2009)065



new evidence for gluon saturation

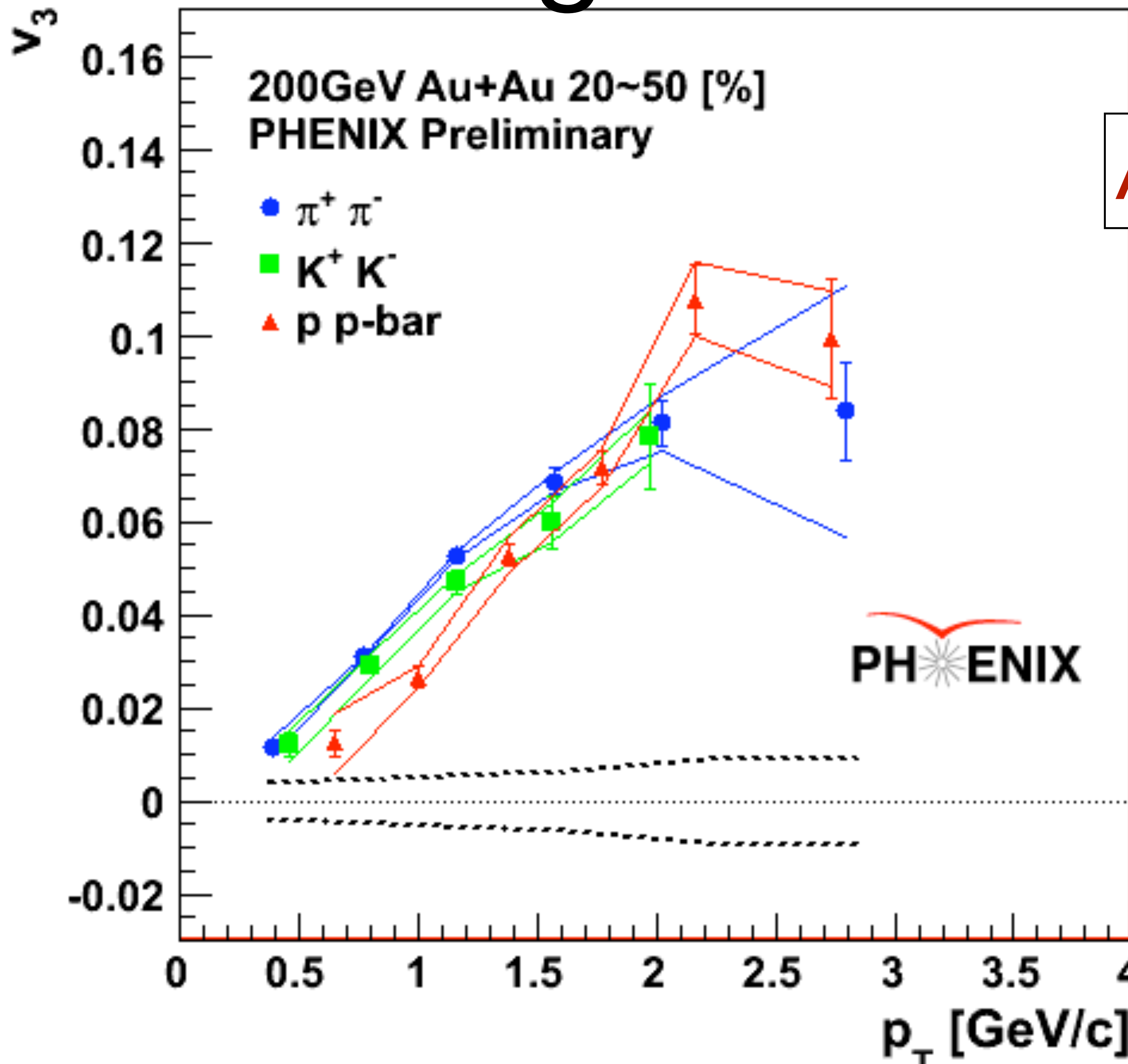
direct photon v_2



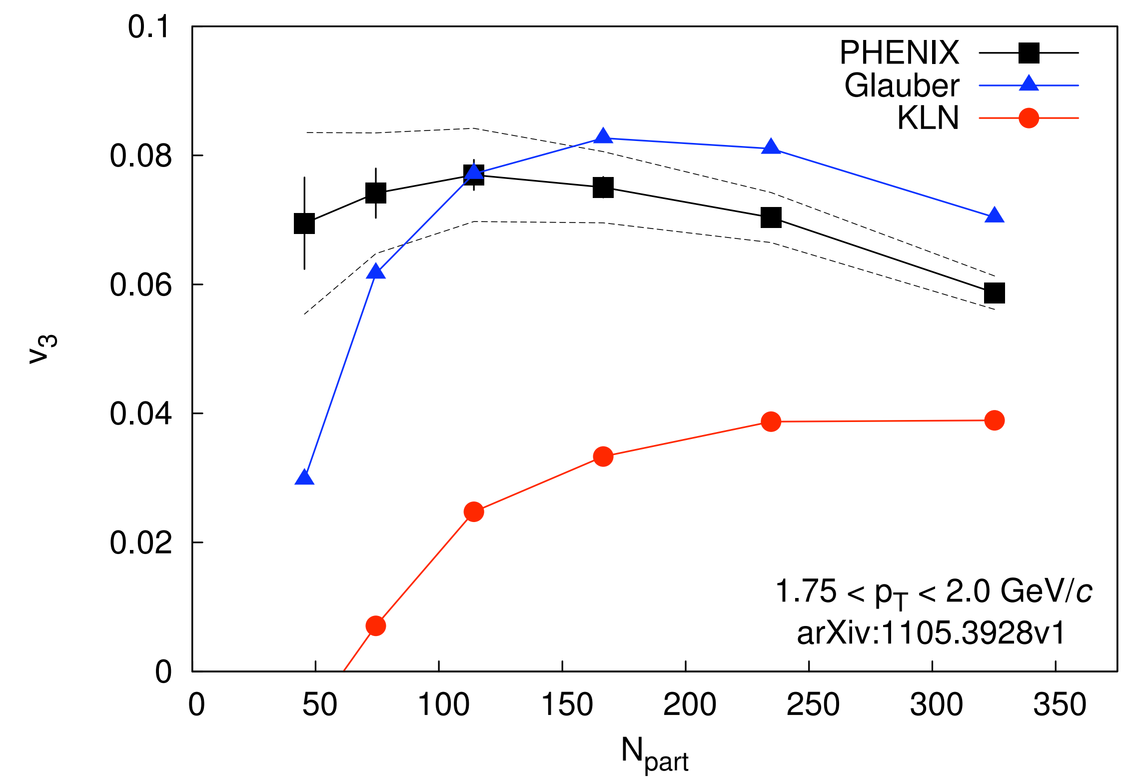
J. Jia, M. Tannenbaum, G. David

large flow is a challenge to theoretical picture

higher order flow: v_3

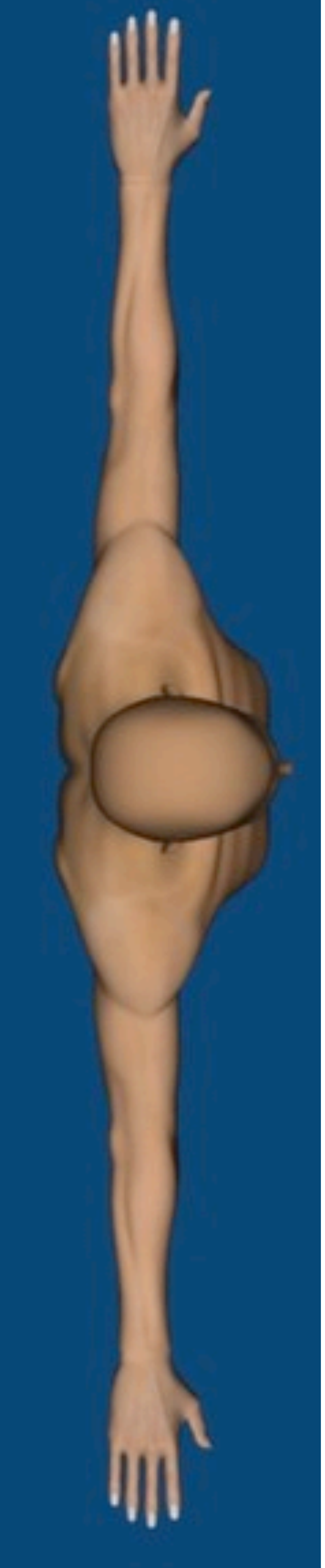


A. Sickles, R. Pak



clarifies long-standing issues in data interpretation

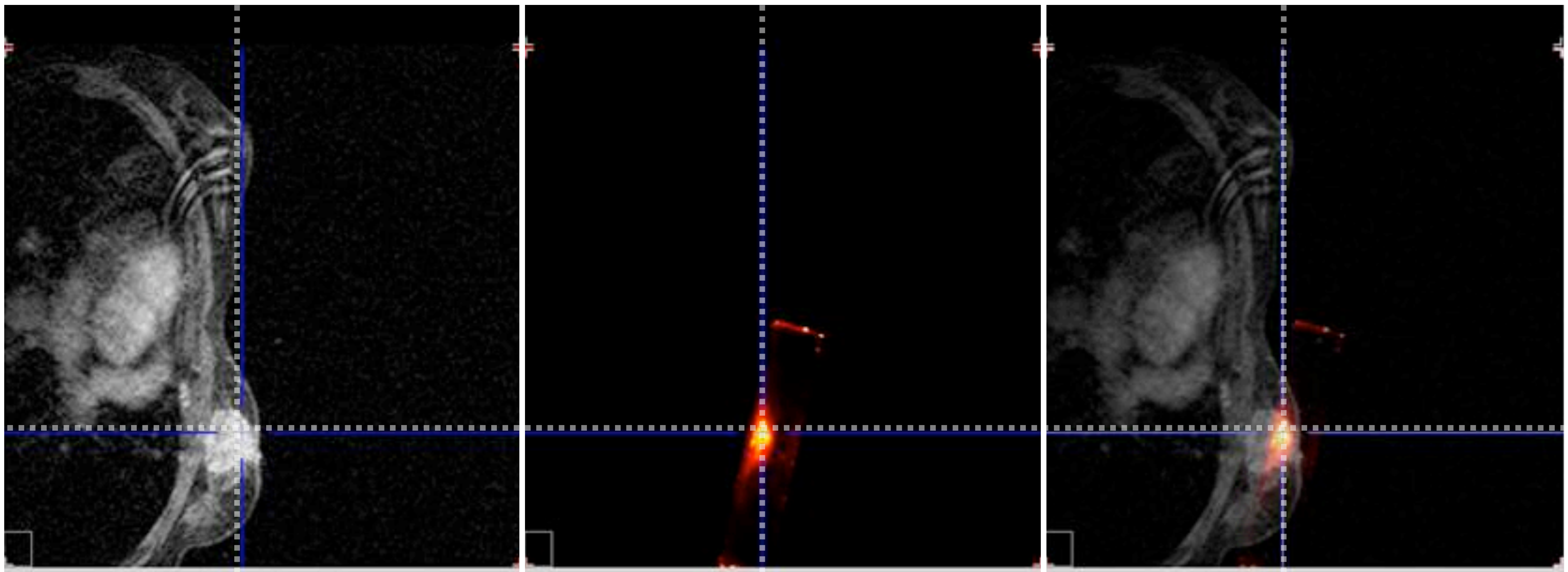
QM'11: ALICE, ATLAS, CMS, STAR, PHENIX



medical imaging

(largely funded by a separate grant)

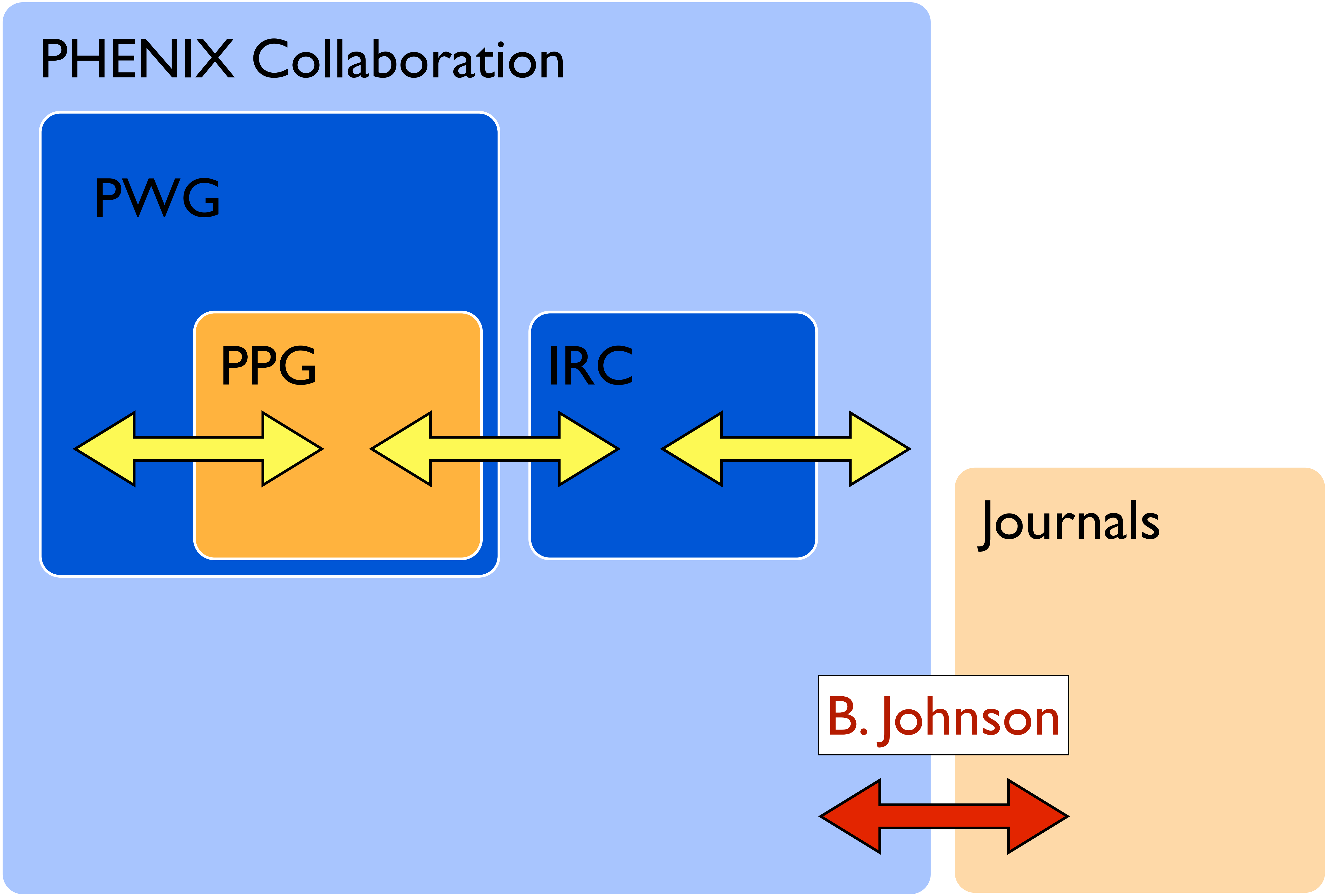
first simultaneous MRI+PET imaging of human breast



MRI PET MRI+PET

leverage expertise in detectors, DAQ, GPUs for data processing

C. Woody, S. Stoll, B. Azmoun, M. Purschke


PHENIX Collaboration
PWG
PPG
IRC
Journals
B. Johnson

2010 publications

01/10 (PX. No. 427 BNL-81902-2008-JA) Double-helicity dependence of jet properties from dihadrons in longitudinally polarized p + p collisions at $\sqrt{s}$ = 200 GeV. Author: A. Adare, et al. Published in: Physical Review D, Volume 81, pages 012002-1 to 012002-13, (January 1, 2010)

03/10 (PX. No. 428 BNL- 91126-2010-JA) Highlights from PHENIX II-Exploring the QCD medium. Author: Carla M. Vale, et al. Published in: Nuclear Physics A, Volume 830, pages 66C-73C (November 1, 2009).

03/10 (PX. No. 429 BNL- 91127-2010-JA) Jet-Medium Interactions with Identified Particles. Author: Anne M. Sickles. Published in: Nuclear Physics A, Volume 830, pages 131C – 138C (November 1, 2009).

03/10 (PX. No. 430 BNL-91234-2010-JA) Non-flow correlations and elliptic flow fluctuations in Au+Au collisions at ps_{NN}= 200 GeV. Author: B. Alver et al. (PHOBOS Collaboration). Accepted in: Physics Review C.

03/10 (PX. No 431 BNL-91235-2010-JA) Event-by-event fluctuations of azimuthal particle anisotropy in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. Author: B. Alver et al. (PHOBOS Collaboration). Accepted in: Physics Review Letters.

03/10 (PX. No. 432 BNL- 91231-2010-JA) Enhanced Production of Direct Photons in Au + Au Collisions at $\sqrt{s_{NN}}$ = 200 GeV and Implications for the Initial Temperature. Author: A. Adare et al. (PHENIX Collaboration). Published in: Physical Review Letters, Volume 104, Number 132301 (April 2, 2010).

03/10 (PX. No. 433 BNL-91232-2010-JA) Detailed measurement of the e^+e^- pair continuum in p+p and Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV and implications for direct photon production. Author: A. Adare et al. (PHENIX Collaboration). Published in: Physical Review C, Volume 81, Number 034911 (2010).

07/10 (PX. No. 434 BNL-93848-2010-JA) Transverse momentum dependence of η meson suppression in Au + Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. Author: A. Adare et al. Published in: Physical Review C82, 011902(R) (2010).

08/10 (PX. No. 435 BNL-93946-2010-BC) Results from RHIC with Implications for LHC. Author: M.J. Tannenbaum. Published by: World Scientific

08/10 (PX. No. 436 BNL-93947-2010-BC) Fundamental Science and Improvement of the Quality of Life-Space Quantization to MRI. Author: M.J. Tannenbaum. Published by: World Scientific

08/10 (PX. No. 437 BNL-93916-2010-JA) A fundamental test of the Higgs Yukawa coupling at RHIC in A+A collisions. Author: M.J. Tannenbaum. Published in: Journal of Physics: Conference Series **230** (2010) 012037

2010 publications

08/10 (PX. No. 438 BNL-93917-2010-JA) Critical examination of RHIC paradigms mostly high pT. Author: M.J. Tannenbaum. Published in: Proceedings of Science. Workshop on Critical Examination of RHIC Paradigms, April 14-17, 2010, Austin, Texas, U.S.A.

09/10 (PX. No. 439 BNL-94001-2010-JA) The ATLAS zero degree calorimeter. Author: Sebastian White. Published in: Nuclear Instruments and Methods in Physics Research A, Volume 617, Pages 126-128 (October 17, 2009).

09/10 (PX. No. 440 BNL-94014-2010-JA) Elliptic and Hexadecapole Flow of Charged Hadrons in Au + Au Collisions at root s(NN)=GeV. Author: Adare, A., et al. Published in: Physical Review Letters, Volume 105, issue 6, number 62301. (August 6, 2010).

09/10 (PX. No. 441 BNL-94034-2010-JA) Dissecting the role of initial collision geometry for jet quenching observables in relativistic heavy ion collisions. Author: Jiangyong Jia and Rui Wei. Published in: Physical Review C 82, 021902 (2010).

09/10 (PX. No. 442 BNL-94148-2010-JA) Azimuthal Anisotropy of π^0 Production in Au+Au Collisions at $\sqrt{s_{NN}}$=200 GeV: Path-Length Dependence of Jet Quenching and the Role of Initial Geometry. Author: A. Adare, et al. Published in: Physical Review Letters, Volume 105, Number 142301, pages 1-7 (October 1, 2010).

10/10 (PX. No. 443 BNL-94210-2010-JA) High pT direct photon and π^0 triggered azimuthal jet correlations and measurement of kT for isolated direct photons in p + p collisions at $\sqrt{s}$ = 200 GeV. Author: A. Adare, et al. Published in: Physical Review D, 82, 072001 (2010).

10/10 (BNL-94280-2010-JA) Phobos results on charged particle multiplicity and pseudorapidity distributions in Au+Au, Cu+Cu, d+Au, and p+p collisions at ultra-relativistic energies. Author: B. Alver, PHOBOS Collaboration, et al. Submitted/Published in: Physical Review C

11/10 (PX. No. 444 BNL-94352-2010-JA) Azimuthal anisotropy: Transition from hydrodynamic flow to jet suppression. Author: R. Lacey, et al. Published in: Physical Review C, Volume 82, issue 3, article number 34910. (November 9, 2010).

12/10 (PX. No. 445 BNL-94461-2010-JA-) A Measurement of the Scintillation Light Yield in CD4 Using a Photosensitive GEM Detector. Author: Babek Azmoun, Adam Caccavano, Matthew Rumore, John Sinsheimer, Nikolai Smirnov, Sean Stoll & Craig Woody. Published in: IEEE Transactions on Nuclear Science, Volume 57, Number 4, Part 2, Pages 2376-2381, (August 2010).

2011 publications

01/11 (PX. No. 446 BNL-94590-2011-JA) Higher-Twist Dynamics in Large Transverse Momentum Hadron Production. Author: Franc¸ois Arleo, Stanley J. Brodsky, Dae Sung Hwang, and Anne M. Sickles. Published in: Physical Review Letters, Volume 105, Number 6, Pages 62002 (August 6, 2010).

01/11 (PX. No. 447 BNL-94592-2011-JA) Extraction of correlated jet pair signals in relativistic heavy ion collisions. Author: A. Sickles, M. McCumber & A. Adare. Published in: Physical Review C, Volume 81, Number 1, Pages 14908 (July 23, 2009).

03/11(PX. No. 448 BNL-94796-2011-JA) Measurement of transverse single-spin asymmetries for J/psi production in polarized p plus p collisions at root s=200 GeV. Author: Adare, A., et all. Published in: Physical Review D, Volume 82, Number 11, Page 112008 (December 2010).

03/11 (BNL-94835-2011-JA) Direct gamma and gamma-jet measurement capability of ATLAS for Pb+Pb collisions. Author: M. Baker for the ATLAS Collaboration. Published in: Nuclear Physics A, Volume 830, pages 499c-502c (2009).

03/11 (PX. No. 449 BNL-94834-2011-JA) Measurement of neutral mesons in p + p collisions at $\sqrt{s}$ = 200 GeV and scaling properties of hadron production. Author: A. Adare, et all. Published in: Physical Review D, Volume 83, Number 052004 (2011).

03/11 (PX. No. 450 BNL-94836-2011-JA) Nuclear modification factors of φ mesons in *d* + Au, Cu + Cu, and Au + Au collisions at $\sqrt{sNN}$ = 200 GeV. Author: A. Adare, et al. Published in: Physical Review C, Volume 83, 024909 (2011).

04/11 (BNL-94917-2011-JA) Charged-particle multiplicity and pseudorapidity distributions measured with the PHOBOS detector in Au + Au, Cu + Cu, d + Au, and p + p collisions at ultrarelativistic energies. Author: B. Alver, et al. Published in: Physical Review C **83**, 024913 (2011).

4/11 PX. No. 451 (BNL-94978-2011-JA) Direct hadron production in hadronic collisions. Author: Francois Arleoa, Stanley J. Brodsky, Dae Sung Hwangd, Anne M. Sickles. Published in: Nuclear Physics B (Proc. Suppl.) 207-208 (2010) 81-84.

04/11 PX. No. 452 (BNL-94979-2011-JA) Cross Section and Parity-Violating Spin Asymmetries of $W^{\pm}$ Boston Production in Polarized p + p Collisions at $\sqrt{sNN}$ = 500 GeV. Author: A. Adare, et al. Published in: Physical Review Letters, Volume 106, 062001 (February 11, 2011).

04/11 PX. No. 453 (BNL-94980-2011-JA) Cross section and double helicity asymmetry for η mesons and their comparision to π^0 production in p + p collisions at $\sqrt{sNN}$ = 200 GeV. Author: A. Adare, et al. Published in: Physical Review D, Volume 83, number 032001 (2011).
05/11 PX. No 454 (BNL-95215-2011-JA) A reaction plan detector for PHENIX at RHIC. Author: Richardson, E., et al. Published in: Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment, Volume 636, Number 1, pages 99-107 (2011).

2011 publications

06/11 (BNL-95283-2011-JA) Initial eccentricity fluctuations and their relation to higher-order flow harmonics. Author: Lacey, R. et al. Published in: Physical Review C, Volume 83 (2011).

06/11 PX. No. 455 (BNL-95307-2011-JA) Design, construction, operation and performance of a Hadron Blind Detector for the PHENIX experiment. Author: W. Anderson, et al. Published in: Nuclear Instruments and Methods in Physics Research A, Volume 10, Number 1016 (April 15, 2011).

06/11 PX. No. 456 (BNL-94829-2011-JA) Simultaneous assessment of rodent behavior and neurochemistry using a miniature positron emission tomography. Author: Daniela Schulz, et al. Published in: Nature Methods, Volume 8, Number 4, pages 347-354 (April 2011).

06/11 PX. No. 457 (BNL– 95121-2011-JA) Small animal simultaneous PET/MRI: initial experiences in a 9.4 T microMRI. Author: Sri Harsha Maramraju, et al. Published in: Physics in Medicine and Biology, Volume 56, pages 2459-2480 (2011).

06/11 PX. No. 458 (BNL-95308-2011-JA) Constraints on models for the initial collisions geometry in ultrarelativistic heavy ion collisions. Author: Roy A. Lacey, et al. Published in: Physical Review C, Volume 81, Number 061901 (2010).

06/11 PX. No. 459 (BNL-95311-2011-CP) Analyzing Ever Growing Datasets in PHENIX. Author: Christopher Pinkenburg, et al. Published in: CHEP 2010, Computing in High Energy Physics, Taipei, Taiwan, (October 18-22, 2010).

06/11 PX. No. 460 (BNL-95310-2011-JA) Jets and Jet-like Correlations in Heavy Ion and p+p Collisions at PHENIX. Author: Christpher Pinkenburg, et al. Published in: ICHEP 2010, International Conference on High Energy Physics, Paris. France, (July 21-28, 2010).

education, outreach

Carla Vale conducting a "Summer Sunday" tour.
From Peter Steinberg's *Quantum Diaries* blog:
`qd.typepad.com/5/2005/08/rhic_summer_sun.html`

- Apprenticing of graduate students, post-docs
- Tours: $\sim 30/\text{year}$, general public, foreign dignitaries, Congressional reps
- *RHIC News* newsletter:
  - `www.bnl.gov/rhic/news`
- *PHENIX Focus* topical series
- *uBNL* journal club
- Mentoring graduate students
- Summer student lectures
- Thesis committees

RHIC news

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Started by J. Haggerty

P. Steinberg current editor

June 30, 2009 Edition

Issue Summary

Wave Function Collapse During ρ^0 Photoproduction in STAR

Welcome to RHIC News

We hope that this web publication will in some small measure reflect the excitement of the RHIC and AGS program at Brookhaven, as explained by some of the people who are doing the experiments, analyzing the data, and writing the papers.

Wave Function Collapse During ρ^0 Photoproduction in STAR

By Spencer Klein, Lawrence Berkeley National Laboratory

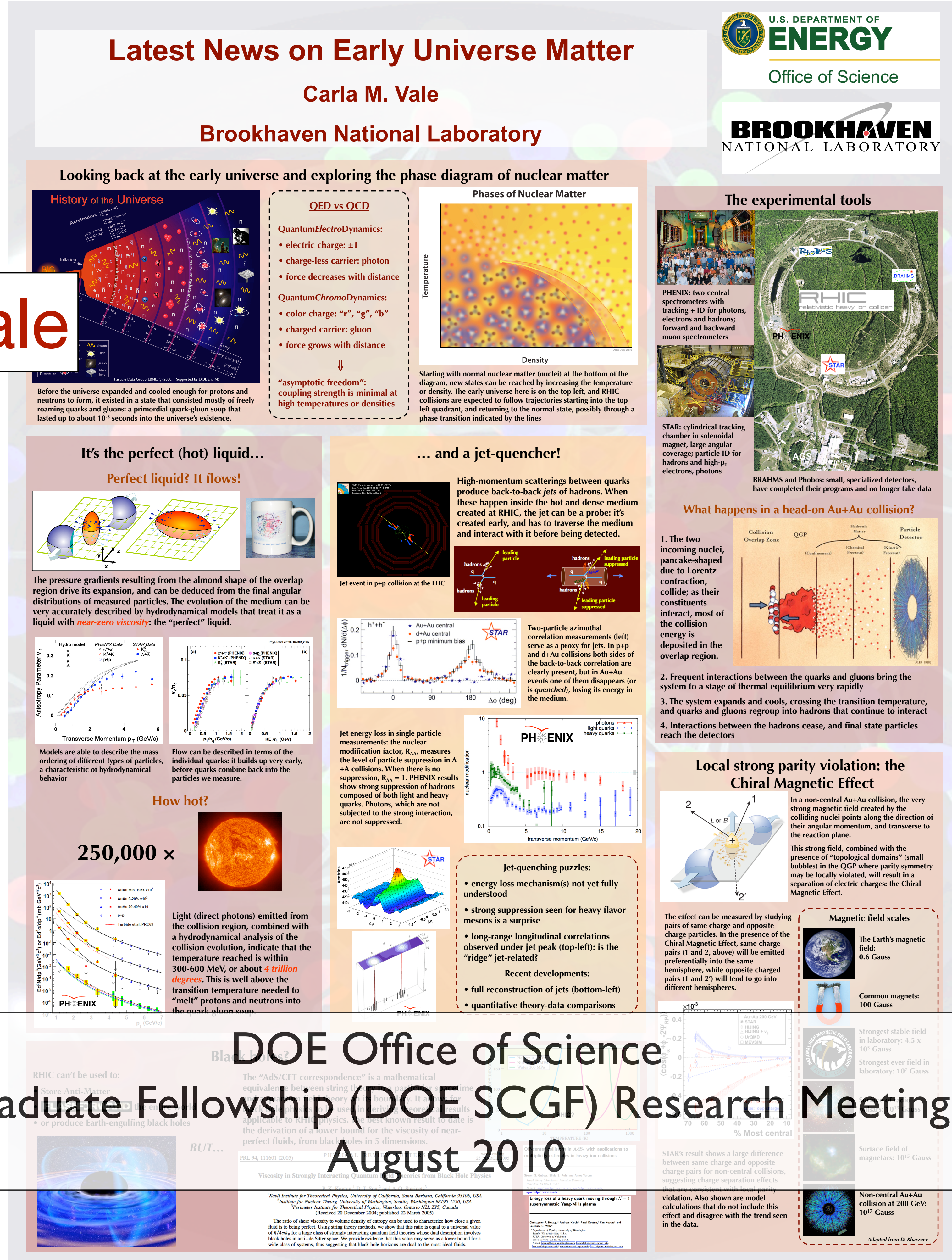
The phrase "relativistic heavy-ion collisions" usually brings to mind violent interactions and complex, 1000-particle final states. However, some RHIC collisions are the exact opposite - the colliding ions act as point sources of fields; the fields interact to produce a few-particle final state, leaving the relativistic nuclei intact. This happens at large impact parameters, where the nuclei do not interact hadronically; these are ultra-peripheral collisions (UPCs). More...

The Relativistic Heavy Ion Collider at Brookhaven National Laboratory is a world-class scientific research facility primarily funded by the U.S. Department of Energy Office of Science. Hundreds of physicists from around the world use RHIC to study what the universe may have looked like in the first few moments after its creation. What physicists learn from these collisions may help us understand more about why the physical world works the way it does, from the smallest subatomic particles, to the largest stars.

many other activities

- M. Purschke chairs BNL cybersecurity advisory committee (CSAC)
- E. Desmond works with BNL non-destructive analysis (NDA) nuclear non-proliferation group
- D. Lynch, S. Boose, P. Giannotti, C. Pinkenburg involved with school science fairs, engineering competitions, robotics
- ...

C. Vale



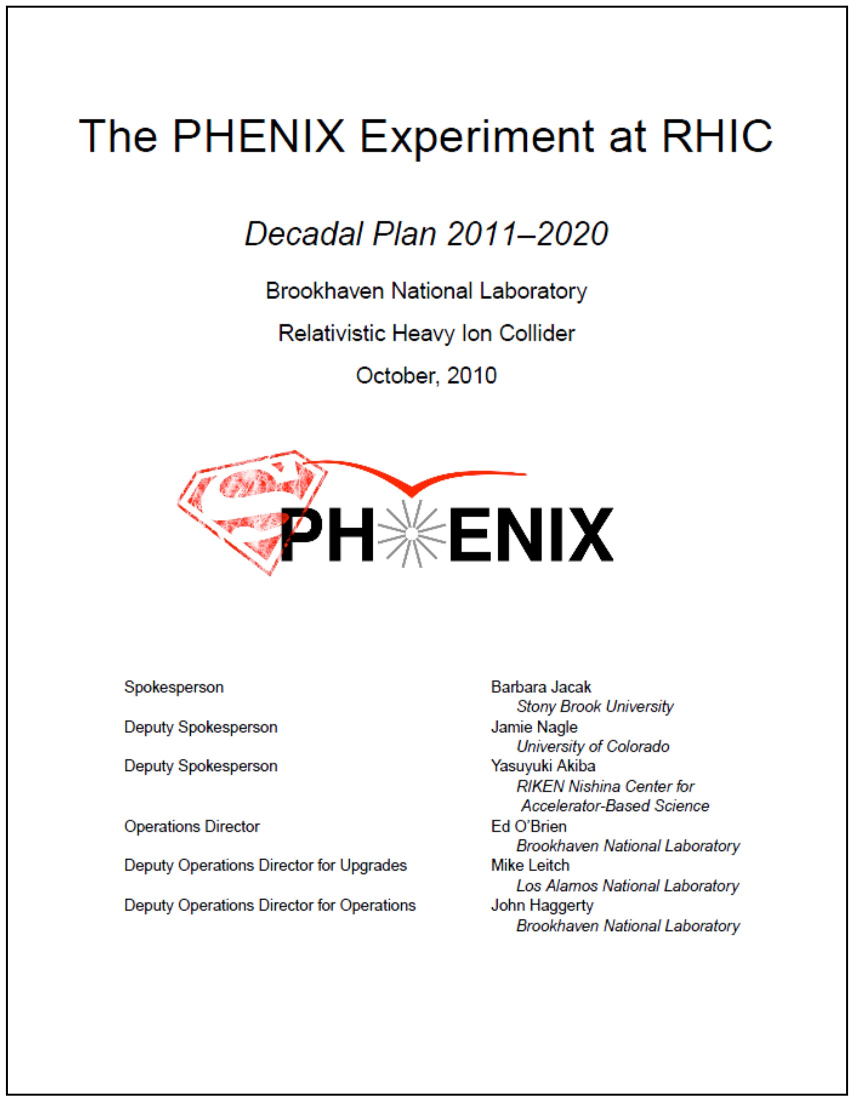
DOE Office of Science

Graduate Fellowship (DOE SCGF) Research Meeting

August 2010

Upgrade involvement and leadership

PHENIX Decadal Plan


The PHENIX Experiment at RHIC

Decadal Plan 2011–2020

Brookhaven National Laboratory

Relativistic Heavy Ion Collider

October, 2010

PHENIX

Spokesperson	Barbara Jacak *Stony Brook University*
Deputy Spokesperson	Jamie Nagle *University of Colorado*
Deputy Spokesperson	Yasuyuki Akiba *RIKEN Nishina Center for Accelerator-Based Science*
Operations Director	Ed O'Brien *Brookhaven National Laboratory*
Deputy Operations Director for Upgrades	Mike Leitch *Los Alamos National Laboratory*
Deputy Operations Director for Operations	John Haggerty *Brookhaven National Laboratory*

- Submitted September 30, 2010
- Available at http://www.phenix.bnl.gov/phenix/WWW/docs/decadal/2010/phenix_decadal10_full_refs.pdf
- 2010-2015 (mid term)
  Physics with (F)VTX, μTrig
- 2015+ (longer term)
  Larger Upgrade (sPHENIX)
  eRHIC connection (ePHENIX)

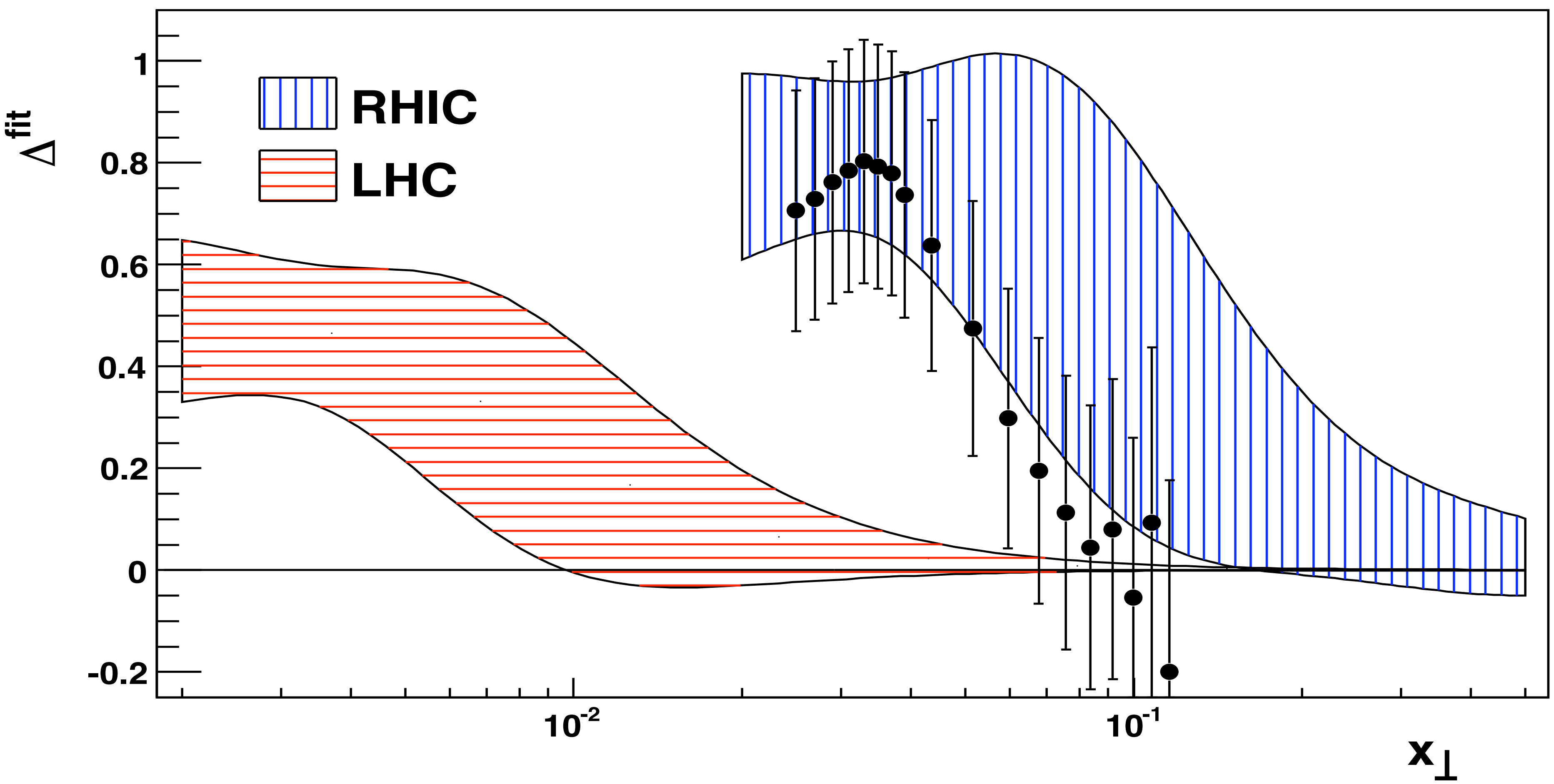
Main editors: J. Nagle, D. Morrison

Collaboration-wide effort: BNL/PHENIX and Spin group members prominently involved.

- Near term: VTX, FVTX and muTrig (Nouicer, Pak)
- Longer term
  - calorimetry, micropattern detectors, low mass tracking (Woody, Kistenev, Sukhanov, Sickles)
  - very fast (20ps) time-of-flight detectors (Chiu)
- Upgrades talks given by members of the group (O'Brien, Sickles, Morrison)

summary

- strong progress on planned research, collaboration involvement and promising new investigation directions
- involved in, and leading, many key analyses
- effective in preparing, presenting and publishing timely results and involving larger community
- maintain group strength by filling positions
- add electronic engineer to support F/VTX
- operations burden growth continues to be issue



Prediction for RHIC p+p
and LHC p+p
from Sickles, Brodsky, Arleo, Hwang